WHAT IS CLAIMED IS:

1. A performance evaluation method for a plasma processing apparatus, the plasma processing apparatus comprising: a plasma processing chamber including a plasma excitation electrode for exciting a plasma; a radiofrequency feeder, the plasma excitation electrode being connected to the output end of the radiofrequency feeder; a radiofrequency generator for supplying a radiofrequency voltage to the plasma excitation electrode; and a matching circuit having an input terminal and an output terminal, the input terminal being connected to the radiofrequency generator and the output terminal being connected to the input end of the radiofrequency feeder so as to achieve impedance matching between the plasma processing chamber and the radiofrequency generator, the method comprising:

calculating the absolute value of the difference ΔC_X between a loss capacitance C_{X0} at a time t_0 and a loss capacitance C_{X1} at a later time t_1 of the plasma processing chamber, the loss capacitances C_{X0} and C_{X1} being measured between the plasma excitation electrode and ground potential positions which are DC-grounded; and

determining that the plasma processing apparatus maintains a required level of performance when the absolute value is less than an upper limit and that the plasma processing apparatus does not maintain the required level of performance when the absolute value is not less than the

upper limit.

2. A performance evaluation method for a plasma processing apparatus according to claim 1, wherein the upper limit is 10% of the loss capacitance C_{X0}.

3. A performance evaluation method for a plasma processing apparatus according to claim 1, wherein the upper limit is 3% of the loss capacitance C_{X0}.

4. A performance evaluation method for a plasma processing apparatus according to claim 1, wherein a workpiece is introduced into the plasma processing chamber between the time t_0 and the later time t_1 to plasma-treat the workpiece.

5. A performance evaluation method for a plasma processing apparatus according to claim 1, wherein an adjustment work including overhaul, parts replacement, and assembly with alignment of the plasma processing chamber is performed between the time t_0 and the later time t_1.

6. A performance evaluation method for a plasma processing apparatus according to claim 1, wherein disassembly, transfer, and reassembly of the plasma processing chamber are performed between the time t_0 and the later time t_1.

7. A maintenance method for a plasma processing apparatus, wherein, when the absolute value of the difference ΔC_x is not less than the upper limit in the performance evaluation method according to claim 1, a corrective action for the loss capacitance C_x is performed.

8. A performance management system for at least one plasma processing apparatus, the plasma processing apparatus comprising: a plasma processing chamber including a plasma excitation electrode for exciting a plasma; a radiofrequency feeder, the plasma excitation electrode being connected to the output end of the radiofrequency feeder; a radiofrequency generator for supplying a radiofrequency voltage to the plasma excitation electrode; and a matching circuit having an input terminal and an output terminal, the input terminal being connected to the radiofrequency generator and the output terminal being connected to the input end of the radiofrequency feeder so as to achieve impedance matching between the plasma processing chamber and the radiofrequency generator, the performance management system comprising:

a server for storing a loss capacitance C_{X0} at a time t_0 between the plasma excitation electrode and ground potential positions which are DC-grounded; and

a customer I/O device linked to the server via a communication line,

wherein the server receives a loss capacitance C_{X1} at a later time t_1 between the plasma excitation electrode and the ground potential positions from the customer I/O device, calculates the absolute value of the difference ΔC_X between the loss capacitance C_{X0} and loss capacitance C_{X1}, and transmits a signal indicating that a required level of performance is maintained when the absolute value is less than an upper limit and a signal indicating that the required level of performance is not maintained when the absolute value is not less than the upper limit to the customer I/O device.

9. A performance management system according to claim 8, wherein the server stores the loss capacitance C_{X0} for the identification number of the plasma processing apparatus, receives the loss capacitance C_{X1} with the identification number, and calculates the difference ΔC_X.

10. A performance management system according to claim 8, further comprising a measuring device for measuring the capacitance, the measuring device being connected to both the plasma processing apparatus and the customer I/O device so that the loss capacitance C_{X1} is directly transmitted from the measuring device to the server.

11. A performance management system according to claim 8, wherein the server comprises an output device at a

delivery site, the output device outputting a maintenance command when the absolute value of the difference ΔC_x is not less than the upper limit.

12. A performance management system for at least one plasma processing apparatus, the plasma processing apparatus comprising: a plasma processing chamber including a plasma excitation electrode for exciting a plasma; a radiofrequency feeder, the plasma excitation electrode being connected to the output end of the radiofrequency feeder; a radiofrequency generator for supplying a radiofrequency voltage to the plasma excitation electrode; and a matching circuit having an input terminal and an output terminal, the input terminal being connected to the radiofrequency generator and the output terminal being connected to the input end of the radiofrequency feeder so as to achieve impedance matching between the plasma processing chamber and the radiofrequency generator, the performance management system comprising:

a server for storing a loss capacitance C_{x0} at a time t_0 between the plasma excitation electrode and ground potential positions which are DC-grounded and service engineer information according to fault levels each having a predetermined range;

an output device for the server, the output device being located at a delivery site; and

a customer I/O device linked to the server via a

communication line,

wherein the server receives a loss capacitance C_{X1} at a later time t_1 between the plasma excitation electrode and the ground potential positions from the customer I/O device, calculates the absolute value of the difference ΔC_X between the loss capacitance C_{X0} and the loss capacitance C_{X1}, and outputs a fault level, service engineer information corresponding to the fault level, and a maintenance command corresponding to the fault level, when the absolute value falls within the fault level with the predetermined range.

13. A performance management system according to claim 12, wherein the server stores the loss capacitance C_{X0} for the identification number of the plasma processing apparatus, receives the loss capacitance C_{X1} with the identification number, and calculates the difference ΔC_X.

14. A performance management system according to claim 12, further comprising a measuring device for measuring the capacitance, the measuring device being connected to both the plasma processing apparatus and the customer I/O device so that the loss capacitance C_{X1} is directly transmitted from the measuring device to the server.

15. A performance management system according to claim 12, wherein the server transmits the fault level to the customer I/O device.

16. A plasma processing apparatus comprising: a plasma processing chamber including a plasma excitation electrode for exciting a plasma; a radiofrequency feeder, the plasma excitation electrode being connected to the output end of the radiofrequency feeder; a radiofrequency generator for supplying a radiofrequency voltage to the plasma excitation electrode; and a matching circuit having an input terminal and an output terminal, the input terminal being connected to the radiofrequency generator and the output terminal being connected to the input end of the radiofrequency feeder so as to achieve impedance matching between the plasma processing chamber and the radiofrequency generator,

wherein the absolute value of the difference ΔC_X between a loss capacitance C_{X0} at a time t_0 and a loss capacitance C_{X1} at a later time t_1 is maintained to be less than an upper limit wherein the loss capacitances C_{X0} and C_{X1} are measured between the plasma excitation electrode and ground potential positions which are DC-grounded.

17. A plasma processing apparatus according to claim 16, wherein the absolute value of the difference ΔC_X is maintained to be less than the upper limit by performing a corrective action of the plasma electrode capacitance when the absolute value of the difference ΔC_X is not less than the upper limit.

18. A performance validation system for the plasma processing apparatus according to claim 16, comprising:

a customer terminal, an engineer terminal, and information providing means,

wherein the customer terminal requests browsing of performance information at the time t_0 and the later time t_1 of the plasma processing apparatus to the information providing means via a public line, the performance information is uploaded by a maintenance engineer to the information providing means through the engineer terminal, and the information providing means provides the performance information uploaded from the engineer terminal to the customer terminal upon the request from the customer terminal.

19. A performance validation system according to claim 18, wherein the performance information includes the loss capacitance C_X.

20. A performance validation system according to claim 19, wherein the performance information is output as a catalog or specifications.

21. A performance evaluation method for a plasma processing apparatus which is disassembled before transfer, is transported to a customer, and is reassembled at a customer site, the plasma processing apparatus comprising: a

plasma processing chamber including a plasma excitation electrode for exciting a plasma; a radiofrequency feeder, the plasma excitation electrode being connected to the output end of the radiofrequency feeder; a radiofrequency generator for supplying a radiofrequency voltage to the plasma excitation electrode; and a matching circuit having an input terminal and an output terminal, the input terminal being connected to the radiofrequency generator and the output terminal being connected to the input end of the radiofrequency feeder so as to achieve impedance matching between the plasma processing chamber and the radiofrequency generator, the method comprising:

determining that the plasma processing apparatus maintains a required level of performance when a loss capacitance C_{X1} of the plasma processing chamber after the delivery is less than 26 times a plasma electrode capacitance C_{e1} and that the plasma processing apparatus does not maintain the required level of performance when the loss capacitance C_{X1} is not less than 26 times the plasma electrode loss capacitance C_{e1}, wherein the loss capacitance C_{X1} is measured between the plasma excitation electrode and ground potential positions which are DC-grounded and the plasma electrode capacitance C_{e1} is measured between the plasma excitation electrode and a counter electrode which generate a plasma in cooperation with each other.

22. A performance evaluation method for a plasma

processing apparatus which is disassembled before transfer, is transported to a customer, and is reassembled at a customer site, the plasma processing apparatus comprising: a plurality of plasma processing chambers including plasma excitation electrodes for exciting plasma; radiofrequency feeders, each plasma excitation electrode being connected to the output end of the corresponding radiofrequency feeder; at least one radiofrequency generator for supplying a radiofrequency voltage to the plasma excitation electrodes; and at least one matching circuit having an input terminal and an output terminal, the input terminal being connected to the radiofrequency generator and the output terminal being connected to the input end of the radiofrequency feeder so as to achieve impedance matching between the plasma processing chambers and the radiofrequency generator, the method comprising:

determining that the plasma processing apparatus maintains a required level of performance when a variation C_{elr}, defined by $(C_{elmax} - C_{elmin})/(C_{elmax} + C_{elmin})$, between the maximum capacitance C_{elmax} and the minimum capacitance C_{elmin} among plasma electrode capacitances C_{el} of the plurality of plasma processing chambers is less than an upper limit and that the plasma processing apparatus does not maintain the required level of performance when the variation is not less than the upper limit, wherein the plasma electrode capacitance C_{el} is measured between the plasma excitation electrode and a counter electrode which generate a plasma in

cooperation with each other; and

determining that the plasma processing apparatus maintains a required level of performance when a variation C_{X1r}, defined by $(C_{X1max} - C_{X1min})/(C_{X1max} + C_{X1min})$, between the maximum capacitance C_{X1max} and the minimum capacitance C_{X1min} among loss capacitances C_{X1} of the plurality of plasma processing chambers is less than an upper limit and that the plasma processing apparatus does not maintain the required level of performance when the variation is not less than the upper limit, wherein the loss capacitance C_{X1} is measured between the plasma excitation electrode and ground potential positions which are DC-grounded.

23. A performance evaluation method for a plasma processing apparatus according to claim 22, wherein both the upper limits for the variation C_{e1r} and the variation C_{X1r} are 0.1.

24. A performance evaluation method for a plasma processing apparatus according to claim 22, wherein both the upper limits for the variation C_{e1r} and the variation C_{X1r} are 0.03.

25. A performance evaluation method for a plasma processing apparatus which is disassembled before transfer, is transported to a customer, and is reassembled at a customer site, the plasma processing apparatus comprising: a

plurality of plasma processing chambers including plasma excitation electrodes for exciting plasma; radiofrequency feeders, each plasma excitation electrode being connected to the output end of the corresponding radiofrequency feeder; at least one radiofrequency generator for supplying a radiofrequency voltage to the plasma excitation electrodes; and at least one matching circuit having an input terminal and an output terminal, the input terminal being connected to the radiofrequency generator and the output terminal being connected to the input end of the radiofrequency feeder so as to achieve impedance matching between the plasma processing chambers and the radiofrequency generator, the method comprising:

determining that the plasma processing apparatus maintains a required level of performance when a variation C_{elr}, defined by $(C_{elmax} - C_{elmin})/(C_{elmax} + C_{elmin})$, between the maximum capacitance C_{elmax} and the minimum capacitance C_{elmin} among plasma electrode capacitances C_{el} of the plurality of plasma processing chambers is less than an upper limit and that the plasma processing apparatus does not maintain the required level of performance when the variation is not less than the upper limit, wherein the plasma electrode capacitance C_{el} is measured between the plasma excitation electrode and a counter electrode which generate a plasma in cooperation with each other; and

determining that the plasma processing apparatus maintains a required level of performance when a variation

C_{X1r}, defined by $(C_{X1max} - C_{X1min})/(C_{X1max} + C_{X1min})$, between the maximum capacitance C_{X1max} and the minimum capacitance C_{X1min} among loss capacitances C_{X1} of the plurality of plasma processing chambers is less than an upper limit and when all the loss capacitances C_{X1} are less than 26 times the plasma electrode capacitance C_{e1} and that the plasma processing apparatus does not maintain the required level of performance when the variation is not less than the upper limit or when one of the loss capacitances C_{X1} is not less than 26 times the plasma electrode capacitance C_{e1}, wherein the loss capacitance C_{X1} is measured between the plasma excitation electrode and ground potential positions which are DC-grounded.

26. A performance evaluation method for a plasma processing apparatus according to claim 25, wherein both the upper limits for the variation C_{e1r} and the variation C_{X1r} are 0.1.

27. A performance evaluation method for a plasma processing apparatus according to claim 25, wherein both the upper limits for the variation C_{e1r} and the variation C_{X1r} are 0.03.

28. A performance evaluation method for a plasma processing system which is disassembled before transfer, is transported to a customer, and is reassembled at a customer

site, the plasma processing system comprising a plurality of plasma processing apparatuses, each comprising: a plasma processing chamber including a plasma excitation electrode for exciting a plasma; a radiofrequency feeder, the plasma excitation electrode being connected to the output end of the radiofrequency feeder; a radiofrequency generator for supplying a radiofrequency voltage to the plasma excitation electrode; and a matching circuit having an input terminal and an output terminal, the input terminal being connected to the radiofrequency generator and the output terminal being connected to the input end of the radiofrequency feeder so as to achieve impedance matching between the plasma processing chamber and the radiofrequency generator, the method comprising:

determining that the plasma processing system maintains a required level of performance when a variation C_{elr}, defined by $(C_{elmax} - C_{elmin})/(C_{elmax} + C_{elmin})$, between the maximum capacitance C_{elmax} and the minimum capacitance C_{elmin} among plasma electrode capacitances C_{el} of the plurality of plasma processing apparatuses is less than an upper limit and that the plasma processing system does not maintain the required level of performance when the variation is not less than the upper limit, wherein the plasma electrode capacitance C_{el} is measured between the plasma excitation electrode and a counter electrode which generate a plasma in cooperation with each other; and

determining that the plasma processing system maintains

a required level of performance when a variation C_{X1r}, defined by $(C_{X1max} - C_{X1min})/(C_{X1max} + C_{X1min})$, between the maximum capacitance C_{X1max} and the minimum capacitance C_{X1min} among loss capacitances C_{X1} of the plurality of plasma processing apparatuses is less than an upper limit and that the plasma processing system does not maintain the required level of performance when the variation is not less than the upper limit, wherein the loss capacitance C_{X1} is measured between the plasma excitation electrode and ground potential positions which are DC-grounded.

29. A performance evaluation method for a plasma processing system according to claim 28, wherein both the upper limits for the variation C_{e1r} and the variation C_{X1r} are 0.1.

30. A performance evaluation method for a plasma processing system according to claim 28, wherein both the upper limits for the variation C_{e1r} and the variation C_{X1r} are 0.03.

31. A performance evaluation method for a plasma processing system which is disassembled before transfer, is transported to a customer, and is reassembled at a customer site, the plasma processing system comprising a plurality of plasma processing apparatuses, each comprising: a plasma processing chamber including a plasma excitation electrode

for exciting a plasma; a radiofrequency feeder, the plasma excitation electrode being connected to the output end of the radiofrequency feeder; a radiofrequency generator for supplying a radiofrequency voltage to the plasma excitation electrode; and a matching circuit having an input terminal and an output terminal, the input terminal being connected to the radiofrequency generator and the output terminal being connected to the input end of the radiofrequency feeder so as to achieve impedance matching between the plasma processing chamber and the radiofrequency generator, the method comprising:

determining that the plasma processing system maintains a required level of performance when a variation C_{elr}, defined by $(C_{elmax} - C_{elmin})/(C_{elmax} + C_{elmin})$, between the maximum capacitance C_{elmax} and the minimum capacitance C_{elmin} among plasma electrode capacitances C_{el} of the plurality of plasma processing apparatuses is less than an upper limit and that the plasma processing system does not maintain the required level of performance when the variation is not less than the upper limit, wherein the plasma electrode capacitance C_{el} is measured between the plasma excitation electrode and a counter electrode which generate a plasma in cooperation with each other; and

determining that the plasma processing apparatus maintains a required level of performance when a variation C_{Xlr}, defined by $(C_{Xlmax} - C_{Xlmin})/(C_{Xlmax} + C_{Xlmin})$, between the maximum capacitance C_{Xlmax} and the minimum capacitance C_{Xlmin}

among loss capacitances C_{X1} of the plurality of plasma processing chambers is less than an upper limit and when all the loss capacitances C_{X1} are less than 26 times the plasma electrode capacitance C_{e1} and that the plasma processing apparatus does not maintain the required level of performance when the variation is not less than the upper limit or when one of the loss capacitances C_{X1} is not less than 26 times the plasma electrode capacitance C_{e1}, wherein the loss capacitance C_{X1} is measured between the plasma excitation electrode and ground potential positions which are DC-grounded.

32. A performance evaluation method for a plasma processing system according to claim 31, wherein both the upper limits for the variation C_{e1r} and the variation C_{X1r} are 0.1.

33. A performance evaluation method for a plasma processing system according to claim 31, wherein both the upper limits for the variation C_{e1r} and the variation C_{X1r} are 0.03.

34. A performance management system for a plasma processing apparatus which is disassembled before transfer, is transported to a customer, and is reassembled at a customer site, the plasma processing apparatus comprising: a plasma processing chamber including a plasma excitation

electrode for exciting a plasma; a radiofrequency feeder, the plasma excitation electrode being connected to the output end of the radiofrequency feeder; a radiofrequency generator for supplying a radiofrequency voltage to the plasma excitation electrode; and a matching circuit having an input terminal and an output terminal, the input terminal being connected to the radiofrequency generator and the output terminal being connected to the input end of the radiofrequency feeder so as to achieve impedance matching between the plasma processing chamber and the radiofrequency generator, the performance management system comprising:

a server; and

a customer I/O device linked to the server via a communication line,

wherein the server receives a loss capacitance C_{X1} and a plasma electrode capacitance C_{e1} after the delivery from the customer I/O device and transmits a signal indicating that a required level of performance is maintained when the loss capacitance C_{X1} is less than 26 times the plasma electrode capacitance C_{e1} and a signal indicating that the required level of performance is not maintained when the loss capacitance C_{X1} is not less than 26 times the plasma electrode capacitance C_{e1} to the customer I/O device, wherein the loss capacitance C_{X1} is measured between the plasma excitation electrode and ground potential positions which are DC-grounded and the plasma electrode capacitance C_{e1} is measured between the plasma excitation electrode and a

counter electrode which generate a plasma in cooperation with each other.

35. A performance management system for a plasma processing apparatus according to claim 34, wherein the server comprises an output device at a delivery site, the output device outputting a maintenance command when the loss capacitance C_{x1} is not less than 26 times the plasma electrode capacitance C_{e1}.

36. A performance management system for a plasma processing apparatus which is disassembled before transfer, is transported to a customer, and is reassembled at a customer site, the plasma processing apparatus comprising: a plurality of plasma processing chambers including plasma excitation electrodes for exciting plasma; radiofrequency feeders, each plasma excitation electrode being connected to the output end of the corresponding radiofrequency feeder; at least one radiofrequency generator for supplying a radiofrequency voltage to the plasma excitation electrodes; and at least one matching circuit having an input terminal and an output terminal, the input terminal being connected to the radiofrequency generator and the output terminal being connected to the input end of the radiofrequency feeder so as to achieve impedance matching between the plasma processing chambers and the radiofrequency generator, the system comprising:

a server; and

a customer I/O device linked to the server via a communication line,

wherein the server receives a loss capacitance C_{x1} and a plasma electrode capacitance C_{e1} after the delivery of each plasma processing chamber from the customer I/O device and transmits a signal indicating that a required level of performance is maintained when the loss capacitance C_{x1} is less than 26 times the plasma electrode capacitance C_{e1} and a signal indicating that the required level of performance is not maintained when the loss capacitance C_{x1} is not less than 26 times the plasma electrode capacitance C_{e1} to the customer I/O device, wherein the loss capacitance C_{x1} is measured between the plasma excitation electrode and ground potential positions which are DC-grounded and the plasma electrode capacitance C_{e1} is measured between the plasma excitation electrode and a counter electrode which generate a plasma in cooperation with each other.

37. A performance management system for a plasma processing apparatus according to claim 36, wherein the server comprises an output device at a delivery site, the output device outputting a maintenance command when the loss capacitance C_{x1} is not less than 26 times the plasma electrode capacitance C_{e1} in any one of the plurality of the plasma processing chamber.

38. A performance management system for a plasma processing apparatus which is disassembled before transfer, is transported to a customer, and is reassembled at a customer site, the plasma processing apparatus comprising: a plurality of plasma processing chambers including plasma excitation electrodes for exciting plasma; radiofrequency feeders, each plasma excitation electrode being connected to the output end of the corresponding radiofrequency feeder; at least one radiofrequency generator for supplying a radiofrequency voltage to the plasma excitation electrodes; and at least one matching circuit having an input terminal and an output terminal, the input terminal being connected to the radiofrequency generator and the output terminal being connected to the input end of the radiofrequency feeder so as to achieve impedance matching between the plasma processing chambers and the radiofrequency generator, the system comprising:

a server comprising an output device; and

a customer I/O device linked to the server via a communication line,

wherein the server receives data of identification numbers and plasma electrode capacitances C_{el} of the plasma processing chambers after the delivery from the customer I/O device, and outputs the identification numbers and a maintenance command through the output device when a variation C_{elr}, defined by $(C_{elmax} - C_{elmin})/(C_{elmax} + C_{elmin})$, between the maximum capacitance C_{elmax} and the minimum

capacitance C_{e1min} among capacitances C_{e1} is not less than an upper limit, wherein each capacitance C_{e1} is measured between the plasma excitation electrode and a counter electrode which generate a plasma in cooperation with each other, and

wherein the server receives data of identification numbers and loss capacitances C_{X1} of the plasma processing chambers after the delivery from the customer I/O device, and outputs the identification numbers and a maintenance command through the output device when a variation C_{X1r}, defined by $(C_{X1max} - C_{X1min})/(C_{X1max} + C_{X1min})$, between the maximum capacitance C_{X1max} and the minimum capacitance C_{X1min} among loss capacitances C_{X1} is not less than an upper limit, wherein each loss capacitance C_{X1} is measured between the plasma excitation electrode and ground potential positions which are DC-grounded.

39. A performance management system for a plasma processing apparatus according to claim 38, wherein both the upper limits for the variation C_{e1r} and the variation C_{X1r} are 0.1.

40. A performance management system for a plasma processing apparatus according to claim 38, wherein both the upper limits for the variation C_{e1r} and the variation C_{X1r} are 0.03.

41. A performance management system for a plasma

processing system which is disassembled before transfer, is transported to a customer, and is reassembled at a customer site, the plasma processing system comprising a plurality of plasma processing apparatuses, each comprising: a plasma processing chamber including a plasma excitation electrode for exciting a plasma; a radiofrequency feeder, the plasma excitation electrode being connected to the output end of the radiofrequency feeder; a radiofrequency generator for supplying a radiofrequency voltage to the plasma excitation electrode; and a matching circuit having an input terminal and an output terminal, the input terminal being connected to the radiofrequency generator and the output terminal being connected to the input end of the radiofrequency feeder so as to achieve impedance matching between the plasma processing chamber and the radiofrequency generator, the performance management system comprising:

a server; and

a customer I/O device linked to the server via a communication line,

wherein the server receives a loss capacitance C_{X1} and a plasma electrode capacitance C_{e1} after the delivery from the customer I/O device and transmits a signal indicating that a required level of performance is maintained when the loss capacitance C_{X1} is less than 26 times the plasma electrode capacitance C_{e1} and a signal indicating that the required level of performance is not maintained when the loss capacitance C_{X1} is not less than 26 times the plasma

electrode capacitance C_{e1} to the customer I/O device, wherein the loss capacitance C_{X1} is measured between the plasma excitation electrode and ground potential positions which are DC-grounded and the plasma electrode capacitance C_{e1} is measured between the plasma excitation electrode and a counter electrode which generate a plasma in cooperation with each other.

42. A performance management system for a plasma processing apparatus according to claim 41, wherein the server comprises an output device at a delivery site, the output device outputting a maintenance command when the loss capacitance C_{X1} is not less than 26 times the plasma electrode capacitance C_{e1} in any one of the plurality of the plasma processing chamber.

43. A performance management system for a plasma processing system which is disassembled before transfer, is transported to a customer, and is reassembled at a customer site, the plasma processing system comprising a plurality of plasma processing apparatuses, each comprising: a plasma processing chamber including a plasma excitation electrode for exciting a plasma; a radiofrequency feeder, the plasma excitation electrode being connected to the output end of the radiofrequency feeder; a radiofrequency generator for supplying a radiofrequency voltage to the plasma excitation electrode; and a matching circuit having an input terminal

and an output terminal, the input terminal being connected to the radiofrequency generator and the output terminal being connected to the input end of the radiofrequency feeder so as to achieve impedance matching between the plasma processing chamber and the radiofrequency generator, the performance management system comprising:

a server; and

a customer I/O device linked to the server via a communication line,

wherein the server receives data of identification numbers and plasma electrode capacitances C_{e1} of the plasma processing chambers after the delivery from the customer I/O device, and outputs the identification numbers and a maintenance command through the output device when a variation C_{e1r}, defined by $(C_{e1max} - C_{e1min})/(C_{e1max} + C_{e1min})$, between the maximum capacitance C_{e1max} and the minimum capacitance C_{e1min} among capacitances C_{e1} is not less than an upper limit, wherein each capacitance C_{e1} is measured between the plasma excitation electrode and a counter electrode which generate a plasma in cooperation with each other; and

wherein the server receives data of identification numbers and loss capacitances C_{X1} of the plasma processing chambers after the delivery from the customer I/O device, and outputs the identification numbers and a maintenance command through the output device when a variation C_{X1r}, defined by $(C_{X1max} - C_{X1min})/(C_{X1max} + C_{X1min})$, between the maximum capacitance C_{X1max} and the minimum capacitance C_{X1min}

among loss capacitances C_{X1} is not less than an upper limit, wherein each loss capacitance C_{X1} is measured between the plasma excitation electrode and ground potential positions which are DC-grounded.

44. A performance management system for a plasma processing system according to claim 43, wherein both the upper limits for the variation C_{e1r} and the variation C_{X1r} are 0.1.

45. A performance management system for a plasma processing system according to claim 43, wherein both the upper limits for the variation C_{e1r} and the variation C_{X1r} are 0.03.

46. A performance validation system for a plasma processing apparatus, comprising:

a customer terminal, an engineer terminal, and information providing means,

wherein the customer terminal requests browsing of performance information to the information providing means via a public line, the performance information including the operational state of the plasma processing apparatus which is disassembled before transfer, is transported to a customer, and is reassembled at a customer site and which is controlled by the performance management system according to claim 36, the performance information is uploaded by a

maintenance engineer to the information providing means through the engineer terminal, and the information providing means provides the performance information uploaded from the engineer terminal to the customer terminal upon the request from the customer terminal.

47. A performance validation system according to claim 46, wherein the performance information includes the plasma electrode capacitance C_e and the loss capacitance C_x.

48. A performance validation system according to claim 47, wherein the performance information is output as a catalog or specifications.

49. A performance validation system for a plasma processing apparatus, comprising:

a customer terminal, an engineer terminal, and information providing means,

wherein the customer terminal requests browsing of performance information to the information providing means via a public line, the performance information including the operational state of the plasma processing apparatus which is disassembled before transfer, is transported to a customer, and is reassembled at a customer site and which is controlled by the performance management system according to claim 38, the performance information is uploaded by a maintenance engineer to the information providing means

through the engineer terminal, and the information providing means provides the performance information uploaded from the engineer terminal to the customer terminal upon the request from the customer terminal.

50. A performance validation system according to claim 49, wherein the performance information includes the plasma electrode capacitance C_e and the loss capacitance C_x.

51. A performance validation system according to claim 50, wherein the performance information is output as a catalog or specifications.

52. A performance validation system for a plasma processing system, comprising:

a customer terminal, an engineer terminal, and information providing means,

wherein the customer terminal requests browsing of performance information to the information providing means via a public line, the performance information including the operational state of the plasma processing system which is disassembled before transfer, is transported to a customer, and is reassembled at a customer site and which is controlled by the performance management system according to claim 41, the performance information is uploaded by a maintenance engineer to the information providing means through the engineer terminal, and the information providing

means provides the performance information uploaded from the engineer terminal to the customer terminal upon the request from the customer terminal.

53. A performance validation system according to claim 52, wherein the performance information includes the plasma electrode capacitance C_e and the loss capacitance C_x.

54. A performance validation system according to claim 53, wherein the performance information is output as a catalog or specifications.

55. A performance validation system for a plasma processing system, comprising:

a customer terminal, an engineer terminal, and information providing means,

wherein the customer terminal requests browsing of performance information to the information providing means via a public line, the performance information including the operational state of the plasma processing system which is disassembled before transfer, is transported to a customer, and is reassembled at a customer site and which is controlled by the performance management system according to claim 43, the performance information is uploaded by a maintenance engineer to the information providing means through the engineer terminal, and the information providing means provides the performance information uploaded from the

engineer terminal to the customer terminal upon the request from the customer terminal.

56. A performance validation system according to claim 55, wherein the performance information includes the plasma electrode capacitance C_e and the loss capacitance C_x.

57. A performance validation system according to claim 56, wherein the performance information is output as a catalog or specifications.